

Appendix H: Public comments

The following are comments by members of the American Falls Subbasin Watershed Advisory Group or American Falls Subbasin Coordinating Committee. **Questions or comments are in bold** with responses in regular font.

If phosphorus is the most likely limiting nutrient in American Falls reservoir, why is there a need for nitrogen load and wasteload allocations?

Granted, phosphorus is most likely the limiting nutrient to vegetative growth in the reservoir. However, there is some uncertainty on what the limiting factor is, because of this we have proposed a nitrogen target and recommended nitrogen load and wasteload allocations.

For some pollutant sources the load allocation is set at the current load estimate rather than the target load. If you have determined that, for example, a canal company has a target load of 100 pounds of total phosphorus for their return drains and the actual estimated load is only 70 pounds, shouldn't the canal company have the 100 pounds as their load allocation?

American Falls Reservoir exceeds recommended chlorophyll *a* (0.015 mg/L), because of excessive algal production. This is caused by high nutrient loading into the reservoir for which reductions in both nitrogen and phosphorus are recommended. It seems counterproductive to give a load allocation (i.e., the target load) above what is currently discharged to the reservoir when what are really needed are overall reductions in nutrient input not additions.

Allowing a nutrient source a load allocation based on a greater target load than current load has potential ramifications for trying to reduce nutrient input, especially with pollutant trading involved. Let's use a simple, and admittedly extreme, example of setting load allocations. A small reservoir has algae problems with current loading into the reservoir estimated at 310 pounds of phosphorus per year. There are three sources of pollutants – a river, a canal company, and a wastewater treatment plant (WWTP), which contribute 200, 70, and 40 pounds of phosphorus a year, respectively (see table below).

For the first scenario (Least Load), loads are based on the lesser of current load or target load. The river is presently at its target load so its load allocation is 200 pounds of phosphorus. The canal company at an input of 70 pounds is below its target load of 100 pounds so its load allocation is the current load of 70 pounds. The WWTP is at 40 pounds and its target load is 10 pounds, which becomes its load allocation under the Least Load scenario. Total load allocation under the Least Load scenario equals 280 pounds, a reduction of 30 pounds from current loading. Effective loading (actual load to the reservoir) is 280 pounds.

For the second scenario (Target Load), all sources are given their target load: 200 pounds for the river, 100 pounds for the canal company, and 10 pounds for the WWTP. Total load allocation under the Target Load scenario is 310 pounds, a reduction of 0 pounds from current loading.

Effective loading is still 280 pounds as long as the canal company maintains its current loading and does not increase to its target load.

Under the third scenario (Trade Load), the WWTP decides it would be too costly to its small population to reduce its current load, so it decides to buy 30 pounds through pollutant trading. The canal company agrees to sell its 30 pounds to the WWTP. The new load allocations become 200 pounds for the river, 70 pounds for the canal company, and 40 pounds for the WWTP. Total load allocation under the Trade Load scenario is 310 pounds, a reduction of 0 pounds from current loading. Effective loading is now 310 pounds.

	Current load	Least Load	Target Load	Trade Load
River	200	200	200	200
Canal company	70	70	100	70
WWTP	40	10	10	40
Total	310	280	310	310

Finally, if pollutant trading is initiated in the subbasin, loads take on value. In this case, giving the canal company a load above and beyond what it currently contributes would convey a benefit to the canal company it did not deserve.

The reservoir model only considered blue-green algae. Are blue-greens the bad actors here?

Information indicates that the reservoir has two periods of high algae densities – a spring bloom of diatoms and a summer bloom of blue-green algae. Blue-green algae (primarily *Aphanizomenon*) represented the highest concentration of phytoplankton in the reservoir in the summer when most of the data were available. Recent spring data were non-existent, so the model concentrated on blue-green algae.

With American Falls Reservoir situated as it is and with the winds typically seen in southeast Idaho, why does the model not consider wind mixing in the reservoir?

The model has a simple representation of the hydrodynamic processes in the reservoir. The general effect of wind on vertical mixing is represented in the vertical diffusion coefficient used in the model. The coefficient used in this assessment was similar to an estimated value from the literature for this reservoir, and the model generally captures the range of vertical stratification observed in the reservoir. A more explicit, dynamic representation of wind mixing could be obtained by using a more complex model framework, such as CE-QUAL-W2. However, application of this model framework would have required bathymetry information for the reservoir, and this information was not available at the time of this assessment.

Both Bannock Creek and American Falls Reservoir are listed for sediment on the 303(d) list. The TMDL states that sediment from Bannock Creek streambanks is a problem. Why then isn't sediment from shoreline erosion in American Falls Reservoir a problem?

BURP data show that Bannock Creek is not supporting its beneficial uses. Although a direct linkage has not been made between non support of coldwater aquatic life and sediment,

modeling in the watershed indicates sediment is elevated above what is observed in West Fork Bannock Creek, which served as a 'reference stream' for the model. No data have been discovered that would indicate sediment is impairing beneficial uses in American Falls Reservoir.

Substantial progress is expected within 10 years of the execution of the implementation plan. Development of a proper monitoring plan should allow a statistical evaluation of that progress. This is fairly optimistic.

Yes, this may be optimistic, especially the ability to statistically verify progress.

If the TMDL is solely based on critical conditions, is there a possibility that the targets may be more restrictive than natural or be unachievable?

Yes, there is a possibility that a TMDL based on critical conditions may be more restrictive than natural or be at least difficult to achieve. One of the problems in writing TMDLs for highly modified system is trying to figure out natural background levels of various constituents (e.g., sediment, nutrients, metals). If natural background levels are impossible to estimate, therefore unknown, then a TMDL could be written that is more restrictive than what occurs naturally.

A TMDL does not have to be based on critical conditions to be difficult to achieve. The purpose of the TMDL is to recommend water quality conditions necessary to support beneficial uses. Sometimes those conditions (i.e., load allocations) are very hard to meet depending on the effort and cost involved. The TMDL is concerned with the physical, chemical, and biological aspects needed to support beneficial uses. The political and economic aspects are left to other arenas.

Much of the sampling that served as a basis for the TMDL occurred during low water years. Concentrations and loads generated from drier-year data may not be indicative of years with greater water supply. There is concern then that conclusions reached in the TMDL may not adequately reflect conditions that would be seen over a longer time frame with a mixture of low, average, and high water years.

This is true. The last several years have been low water years in terms of water supply. The TMDL is based on the data we have and unfortunately does not include average or high water years.

As more data become available from higher water years, the TMDL can be revisited if the new data warrant it. DEQ monitoring will continue on Snake River and in American Falls Reservoir, but it is unknown if BOR, or other entities, will continue their monitoring.

Collecting data may penalize entities that "do the right thing", when those data are used in the TMDL to develop a load restriction. Entities that do not collect data, yet may be sources of pollutants, do not receive a load restriction, especially if they are an unknown source.

Collecting data is good as it does two things. First, better data mean a better TMDL and improves our chances of developing plans to support beneficial uses, which it is believed most of us want. Second, it protects those who collect data. Yes, there is a possibility that without data, load restrictions might be more liberal, but the reverse is also true. In many situations, it allows the entity to show that they are being good stewards of the resource. In other situations, the data provide a baseline from which the entity can show improvement.

Granted there are probably sources of pollutants, which at this time are not included in the TMDL because we are unaware of them. However, it is hoped that this public comment period would provide an opportunity for “those in the know” to make us cognizant of such situations.

Another problem that I see with the TMDL is that it does not take into account the flow of water. For example, some entity could reduce its nutrient loading of the reservoir by reducing the flow of water it discharges into the reservoir to one-third, even if the concentration of nutrients in that flow is twice as great. I am not sure that this is desirable.

Loads/wasteloads are based on flow and concentration, so reducing either would lower the load. In this case, a combination of reducing flow by $\frac{1}{3}$ and increasing concentration by $\frac{1}{2}$ would still result in a lower load. The TMDL recommends a load or wasteload allocation, but does not prescribe how an entity reduces that load. Ideally, it would be preferable to see a reduction in concentration, but the ultimate goal is to reduce total contribution of the pollutant to the receiving water, which the above scenario does.

The TMDL recommends a load allocation for Aberdeen-Springfield Canal Company. Do any of the other canal companies in southeast Idaho have TMDL requirements? There are several other companies between the Bingham-Bonneville County line and the dam, about which I know very little.

No, there are no other canal companies that have a direct load allocation similar to what is recommended for Aberdeen-Springfield Canal Company (ASCC) in southeast Idaho. No other canal company has collected the data that ASCC has, nor is there any other canal company of which we are aware that has as many drains out of the canal system. However, other regions have made allocations to canal companies (Clyde Lay, DEQ/Twin Falls, personal communication). In Portneuf River, sediment loads were assigned to canals in general.

Also in Portneuf River, indirect loads have been placed on canal companies whose return water enters a waterbody that has an established TMDL. For example, Muddy Creek has a sediment TMDL, and Pretty Good Water Canal Company contributes sediment to Muddy Creek each spring when it “flushes” out its canals. The intent would be that in any implementation plan for Muddy Creek, the canal company is identified; monitoring occurs so its contribution can be quantified; an appropriate load is allocated; and a plan put in place to meet the load allocation.

There is a need to identify and monitor all sources that drain into the listed waterbodies, but primarily American Falls Reservoir and Snake River. Folks need to step up and help us identify

those drains, springs, etc., that need monitoring so DEQ can be in touch with the appropriate entity, if a canal drain, to work out a monitoring plan.

Flow in Snake River is increased when the Aberdeen Springfield Canal Company (ASCC) calls for water as water is released from storage upstream to fulfill their order. ASCC water also enhances flow to American Falls Reservoir when the drains are open discharging water, much of which finds its way to the reservoir, either directly or indirectly. Canal flow is also desirable as it contributes to aquifer recharge. If ASCC tries to meet their load allocation by reducing the amount of water they order (i.e., reducing flow in the *concentration x flow = load* equation), timing of flows in Snake River and discharge to the reservoir will most likely change as well as reduction of aquifer recharge.

Yes, if ASCC were to reduce their call for water as a way to meet their load allocation, a change in flow rates in the system would be expected. It is not known, however, whether this would be a positive or negative. Although DEQ does not have authority regarding water rights, changes in flow patterns to meet TMDLs certainly have the potential for unknown ramifications.

I did not see that we are planning to reduce the loading into the reservoir from springs, which may be significant sources of pollutants. Monitoring springs can be a real headache.

Where data from springs were available, load allocations were recommended. As mentioned in the TMDL, there is a need to identify and monitor all springs. Yes, estimating pollutant contributions from springs inundated by the reservoir, would be a real challenge.

The Aberdeen Springfield Canal Company improves water quality in American Falls Reservoir. By diverting water out of the river above Blackfoot and cleaning it up as it goes through the system, drain water is lower in pollutants (especially nitrogen) than the water would have been by continuing to the reservoir via the river.

Our data does not seem to be as clear-cut. Average concentrations of total nitrogen and total phosphorus at Nash and R spills are less than those seen at Snake River at Blackfoot (see table below). Cedar Spill presents a slightly different picture. Total phosphorus and total nitrogen are lower than Snake River at Blackfoot (see table below), but both phosphate and nitrate+nitrite are higher at 0.053 and 0.694 mg/L (34 sampling events), respectively (Table 2-17). (Only recently did water chemistry analysis of the spills change from sampling for phosphate and nitrate+nitrite to total phosphorus and total nitrogen.) Suspended solids are greater at all spills in comparison to the river.

Parameter	Statistic	Cedar spill	Nash spill	R spill	Snake River @ Blackfoot
Total P	Average	0.011	0.013	0.016	0.031
	Std Dev.	0.008	0.010	0.007	0.014
	Count	8	4	7	27
Total N	Average	0.179	0.094	0.196	0.316
	Std Dev.	0.417	0.067	0.296	0.11
	Count	8	4	7	27
Suspended solids	Average	86.4	9.5	10.6	8.0
	Std Dev.	414.4	8.0	6.8	5.2
	Count	34	3	6	27

We also performed paired t-tests for total phosphorus, total nitrogen, and total suspended solids concentrations from April to October collected at Snake River at Blackfoot and Firth, the two sites which bracket the ASCC diversion (Appendix C). There were no significant differences at the 95% level for total phosphorus ($n = 27$, degrees of freedom = 26, t statistic = -1.211, p value [two-tail test] = 0.24), total nitrogen ($n = 27$, degrees of freedom = 26, t statistic = 0.157, p value [two-tail test] = 0.88), or total suspended solids ($n = 27$, degrees of freedom = 26, t statistic = 1.82, p value [two-tail test] = 0.08)

I have concerns about the Snake River flow regimes used in the model. Both 1997 and 1999 were flood years and I wonder what the model output would be if a 'normal' flow year had been modeled. This matter needs to be seriously considered.

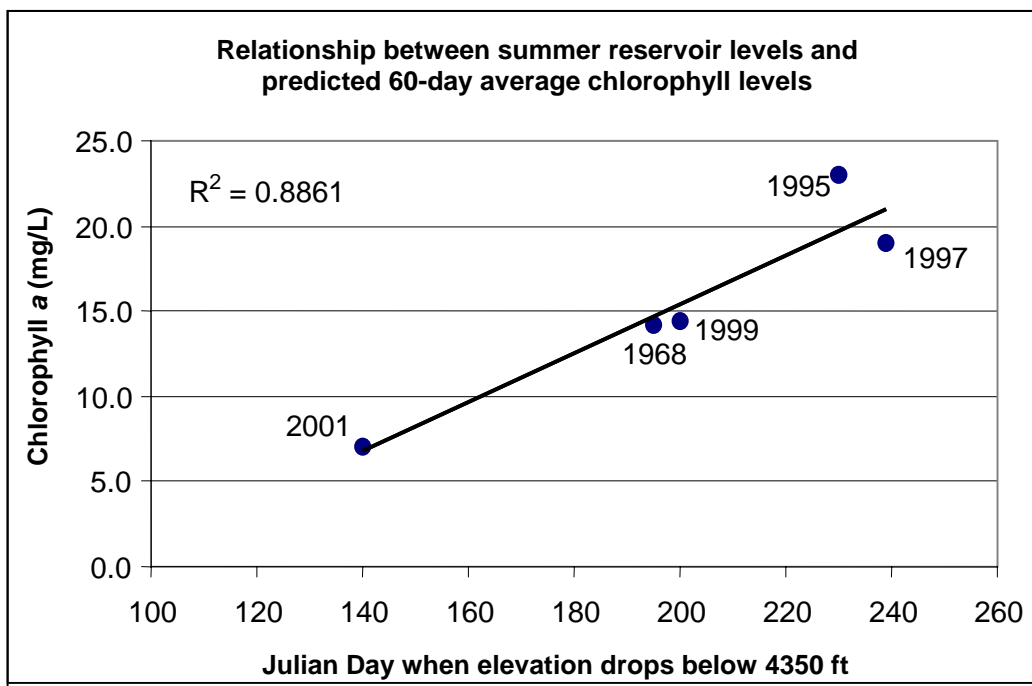
The department agrees that 1999 represents a high flow year and not an average year, and this was noted in the TMDL. The TMDL is based on a consideration of the results of all of EPA's model tests, which bracket the range of flow conditions in the record. There was added emphasis on higher flows (1999, 1997) in the modeling, because the model predicts higher chlorophyll *a* levels in higher flow years. Since the critical conditions are predicted to occur during higher flow years, a simulation using the 50th percentile flow year (i.e., a 'normal' year) would not change the TMDL allocations.

Ben Cope, EPA modeler, was asked to model flows from 1995, which was in the 48th percentile for all calendar year flows from 1970 to 2001 at the USGS gage site on the Snake River at Blackfoot (Ferry Butte). He encountered more error in the water budget than in other years, e.g., elevations were too high in mid-late summer. When the model was run with the shaky water balance, the water quality was better than 1997 but worse than 1999. The 60-day average chlorophyll *a* was about 0.020 mg/L.

Following the 1995 modeling attempt, 1968 calendar year flow was also modeled. Flow in 1968 was equivalent to the 47th percentile for 1970 to 2001 calendar year flows. The resulting 60-day average chlorophyll *a* concentration of 14.2 mg/L was more along the lines of other years.

Ben is doubtful that "... we can ascertain an 'average' year, because the seasonal reservoir management (inflow versus outflow and resulting elevation) may be just as important as annual water budget. As part of my explorations, I noticed that the date at which the reservoir elevation

drops below 4350 [ft] appears to line up with the model results more than annual water volumes [see figure below]. The model may be telling us that earlier drafting would drop the residence time, lower orthophosphate levels, and starve the bloom. I would need to follow up and compare more predictions to explore this hypothesis. I think I've seen enough to say that Snake inflow is a factor but probably not a single determining factor for predicting water quality.”



Does Snake River Cattle Company have an NPDES permit and is it a source of nutrients to the reservoir?

Yes, Snake River Cattle Company is large confined animal feeding operation (CAFO) and as such does have an NPDES. Although there is a possibility of discharging to the reservoir, Kelly Mortensen, (livestock investigator with Idaho Department of Agriculture, personnel communication) has no knowledge of any such discharge.

There is concern for the potential contribution of pollutants from possible contamination of groundwater, which is then pumped for irrigation and finds its way into, for example, the reservoir via surface water.

To develop the best TMDL possible to meet beneficial uses for southeast Idaho residents it is important to have applicable data from all pollutant sources in the subbasin. DEQ is more than willing to work with the various entities that are sources of pollutants, which contribute to loads in American Falls Subbasin. It behooves all of us to collect appropriate data so we can accurately estimate loads, prioritize areas, and begin implementing policies, programs, and/or

practices to reduce loads to help meet beneficial uses. Sometimes DEQ needs help identifying those entities.

Aberdeen-Springfield Canal company is concerned that should total loads in the Reservoir increase due to unaccounted for sources, it would be faced with decreasing its already negligible loads. There was no assurance found in the document that ASCC wouldn't have to make up for sources outside of its control, or DEQ knowledge.

We believe that this concern is covered under the Reasonable Assurance section of this document. In fact, if reasonable assurance that nonpoint source reductions will be achieved is not provided, the entire pollutant load will be assigned to point sources. At this time, canal companies are not considered point sources (IDAPA 58.01.02.003.87).

In my opinion the biggest problem with the document is the lack of comprehensive data. While I realize that getting that data is a long-term process, it concerns me that we are casting allocations in stone and that modification of the TMDL will be very difficult.

There is seldom enough data. DEQ plans to continue its monitoring of Snake River and American Falls Reservoir, although the agency has neither staff time nor money to adequately sample all American Falls Subbasin waterbodies. In a perfect world, all potential sources would be willing to monitor their contribution to subbasin loads. As more information becomes available, especially data contradictory to the TMDL, the TMDL can be revisited.

Finally, I would really like to see more coordination between TMDLs for the Snake and its tributaries (e.g., Portneuf and Blackfoot rivers).

We are not sure what all is envisioned in this statement. Both Portneuf and Blackfoot river TMDLs have been approved by EPA. In hindsight, it might have been better to have completed American Falls Subbasin prior to Portneuf River, but such was not the case.

There was coordination on this American Falls Subbasin TMDL and Portneuf River TMDL, but not Blackfoot River TMDL. Load allocations recommended for American Falls Reservoir helped drive changes in target concentrations in Portneuf River. These changes will be reflected in the Portneuf River TMDL when it is revisited in 2004. The Blackfoot River was not considered in this TMDL for two reasons. First, Blackfoot River enters Snake River just upstream of Ferry Butte and Tilden Bridge. Therefore, data collected at Snake River near Blackfoot (Ferry Butte) included any input from Blackfoot River. Second, lower Blackfoot River was not listed on the 303(d) list.